

## FORAGE SUITABILITY GROUP

### Loamy Saline

**FSG No.:** G034B1024CO  
**Major Land Resource Area:** 034B - Warm Central Desertic Basins and Plateaus  
**Land Resource Unit:** 34B-1: 8-10 inches precipitation zone

#### PHYSIOGRAPHIC FEATURES

The land resource area 34B-1 occurs in Northeastern Utah and Western Colorado. Utah Counties included in this area are Carbon, Emery, Grand, Duchesne and Uintah. Colorado counties included in this area are Mesa, Delta, Montrose, Garfield, Rio Blanco and Moffat.

The soils on this group are found on alluvial terraces, alluvial fans, side slopes and hills.

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	4000	7000
<b>Slope (percent):</b>	0	15
<b>Flooding:</b>		
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Ponding:</b>		
<b>Depth (inches):</b>		
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Runoff Class:</b>	Very low	High

#### CLIMATIC FEATURES

The climate for this land resource area is considered arid or semi arid. The yearly total annual precipitation for this resource area ranges from 8-10 inches. Following are data for two climate stations within this precipitation zone. For data from a climate station nearer to your location, access the national Water and Climate Center at <http://www.wcc.nrcs.usda.gov/>, or visit your local Natural Resources Conservation Service Field Office.

Temperature Data Related to Growth of Plants										
County/ State	Climate Station	Elevation (Feet)	Growing Degree-Day Units †		Growing Season					
					Length of Period		Average Date of 32° F		Average Date of 28° F	
			Base 50°F	Base 40°F	32°F	28°F	Last frost in Spring	First Frost in Fall	Last Killing freeze in Spring	First Killing freeze in Fall
Mesa/CO	Fruita	4477	2950	5102	117	142	May 30	Sep. 16	May 17	Sep. 28
Duchesne UT	Duchesne	5530	2099	4021	111	128	May 31	Sep.13	May 14	Sep. 15

† **Growing Degree-Day Units** are computed as the difference between the daily average temperature and the base temperature. (Daily Average Temperature - Base Temperature) One unit is accumulated for each degree Fahrenheit the average temperature is above the base temperature. Negative numbers are discarded.

**Example:** If the day's high temperature was 95 and the low temperature was 55, the base 50 heating degree-day units is  $[(95 + 55) / 2] - 50 = 25$ . This is done for each day of the month and summed.

Precipitation and Temperature, Monthly and Annual Average				
Month	Precipitation (inches)		Temperature (°F)	
	Fruita Station	Duchesne Station	Fruita Station	Duchesne Station
January	0.59	0.43	23.3	20.0
February	0.47	0.51	32.3	25.2
March	0.84	0.64	41.1	32.4
April	0.68	0.84	50.1	40.9
May	0.87	0.91	59.6	49.7
June	0.51	0.90	68.8	58.5
July	0.76	0.97	75.1	65.4
August	0.86	1.00	72.5	63.4
September	0.71	1.17	63.4	54.6
October	0.94	0.94	51.4	43.5
November	0.74	0.52	38.3	31.7
December	0.66	0.76	27.4	21.4
<b>Annual Average</b>	<b>8.63</b>	<b>9.59</b>	<b>50.3</b>	<b>42.2</b>

Climate Station	Location	From	To
CO3146	Fruita 1 W	1961	1990
UT2253	Duchesne	1961	1990

### **SOIL PROPERTIES**

This group consists of moderately deep to very deep, well drained, moderately coarse to moderately fine textured soils. Available water capacity is low to high and permeability is slow to moderate.

<b>Drainage Class:</b>	Well drained	To	Well drained
<b>Permeability Class:</b> (0 - 40 inches)	Slow	To	Moderate
<b>Frost Action Class:</b>	Low	To	Moderate

	<u>Minimum</u>	<u>Maximum</u>
<b>Depth:</b>	20	> 60
<b>Organic Matter (percent):</b> (surface layer)	0.5	1.0
<b>Electrical Conductivity (mmhos/cm):</b> (0 - 24 inches)	2	16
<b>Sodium Absorption Ratio:</b> (0 - 12 inches)	0	13
<b>Soil Reaction (1:1) Water (pH):</b> (0 - 12 inches)	7.4	9
<b>Available Water Capacity (inches):</b> (0 - 60 inches)	4	12
<b>Calcium Carbonate Equivalent (percent):</b> (0 - 12 inches)	0	10

### **ADAPTED SPECIES LIST**

The followings forage species are adapted to grow on the soils in this group. Additional information concerning plant characteristics of a number of the listed species as well as individual cultivars of many of these species can be accessed at the following web site: <http://plants.usda.gov/>

<b>Cool Season Grasses</b>	<b>Plant Symbol</b>	<b>Dryland</b>	<b>Irrigated</b>
Altai wildrye	LEYMU	NS	G
Bottlebrush squirreltail	ELELE	F	NS
Canada wildrye	ELCA4	NS	F
Creeping meadow foxtail	ALAR	NS	F
Crested wheatgrass	AGCR	F	NS
Indian ricegrass	ACHY	F	NS
Newhy hybrid wheatgrass	ELHO	NS	F
Reed canarygrass	PHAR3	NS	F
Russian wildrye	PSJU3	G	G
Siberian wheatgrass	AGFR	F	NS
Tall fescue	LOAR10	NS	G
Tall wheatgrass	THPO	NS	G
<b>Warm Season Grasses</b>	<b>Plant Symbol</b>	<b>Dryland</b>	<b>Irrigated</b>
Alkali sacaton	SPAI	F	F
Inland saltgrass	DISP	NS	F
<b>Other Perennial Forbs</b>	<b>Plant Symbol</b>	<b>Dryland</b>	<b>Irrigated</b>
Four wing saltbush	ATCAC	G	NS

G - Good adaptation for forage production on this group of soils in this MLRA

F - Fair adaptation but will produce at its highest potential

NS - Species is not suited or adapted to the site and should not be planted

### **PRODUCTION ESTIMATES**

Production estimates listed here should only be used for making general management recommendations. On-site production information should always be used for making detailed planning and management recommendations.

Listed below are low and high production estimates for the more commonly grown forages for this group. The high forage production estimates are based on dense, vigorous stands of climatically adapted, superior performing cultivars. Stands are properly fertilized to obtain high yields. Pest infestations are kept below economic thresholds. Mechanical harvests are managed to maintain stand life by cutting at appropriate stages of maturity and harvest intervals. Optimum beginning and ending grazing heights are adhered to, if stands are grazed. Adequate time is allowed for plant recovery before entering winter dormancy under both harvest regimes.

These production estimates represent total annual above ground plant production on an air-dry-matter basis. Production estimates for hay and grazing can be calculated from these numbers by multiplying them by a harvest efficiency factor. Seventy- percent harvest efficiency is commonly used when converting to hay yields. Pasture harvest efficiency depends upon the grazing management system applied, and usually ranges from 25 to 50 percent efficiency.

Forage Crop	Dryland Production Range (lb/ac)		Irrigated Production Range (lb/ac)	
	Low	High	Low	High
Alkali sacaton	450	900	4600	9100
Bottlebrush squirreltail	450	900	NS*	NS
Canada wildrye	NS	NS	2900	5700
Creeping meadow foxtail	NS	NS	1700	3100
Crested wheatgrass	450	900	NS	NS
Fourwing saltbush	600	1200	NS	NS
Indian ricegrass	450	900	NS	NS
Inland saltgrass	NS	NS	2400	5000
Newhy hybrid wheatgrass	NS	NS	4600	9300
Reed canarygrass	NS	NS	3100	6200
Russian wildrye	600	1200	3000	4300
Siberian wheatgrass	450	900	NS	NS
Tall fescue	NS	NS	5000	10000
Tall wheatgrass	NS	NS	5700	11300

\*NS = not suited

#### **FORAGE GROWTH CURVES**

**Growth Curve Number:** CO1221  
**Growth Curve Name:** Crested Wheatgrass  
**Growth Curve Description:** Grand Valley, Dryland Pasture  
**Percent Production by Month:**

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	5	15	30	35	5	5	5	0	0	0

**Growth Curve Number:** CO1231  
**Growth Curve Name:** Cool Season Grasses  
**Growth Curve Description:** Grand Valley, Irrigated Pasture  
**Percent Production by Month:**

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	5	30	30	5	10	15	5	0	0

**Growth Curve Number:** CO1232  
**Growth Curve Name:** Warm-Season Grasses  
**Growth Curve Description:** Grand Valley, Irrigated Pasture  
**Percent Production by Month:**

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	0	5	20	40	25	5	5	0	0

#### **SOIL LIMITATIONS**

The Loamy Saline forage suitability group is limited to the production of forage crops due to soil salinity. A saturation extract of these soils has an electrical conductivity ranging from 2 to 16 mmhos/cm, with the majority of the soils falling within the moderately saline category (8-16 mmhos/cm). Moderately saline soils depress the yields of even salt tolerant forages and may render them less palatable. Forage yields are reduced at this level of salinity due to limited uptake of minerals and water. The available water capacity of saline soils is reduced by 25 % for each 4 mmhos /cm of electrical conductivity.

## **MANAGEMENT CONSIDERATIONS**

Salinity - A soil test is recommended to determine salinity levels before planting any forage crop in this group of soils.

## **FSG DOCUMENTATION**

### **References:**

United States Department of Agriculture, Soil Conservation Service. Land Resource Regions and Major Land Resource Areas of The United States. Agriculture Handbook 296. Washington, D.C.

United States Department of Agriculture, Natural Resources Conservation Service. National Water and Climate Center. <http://www.wwc.nrcs.usda.gov/>

United States Department of Agriculture, Natural Resources Conservation Service. Official Soil Series Descriptions. <http://soils.usda.gov/classification/main.htm>

United States Department of Agriculture, Natural Resources Conservation Service. 1997. National Range and Pasture Handbook. Grazing Lands Technology Institute.

Brummer, J.E., C.H., Pearson, and J. J. Johnson. 2000. Colorado Forage Research 1999. Alfalfa, Irrigated Pastures and Mountain Meadows. Colorado State University, Agricultural Experiment Station, Technical Report TR00-6.

United States Department of Agriculture, Natural Resources Conservation Service. 2002. Colorado Plant Materials Technical Note No. 59 (Revised).

United States Department of Agriculture, Natural Resources Conservation Service. The PLANTS database. 2002. <http://plants.usda.gov/>.

Personal communication from various technical specialists from Colorado Natural Resources Conservation Service.

Cooley, A.W., C.H., Pearson and J. Brummer. Intermountain Grass and Legume Forage Production Manual. Colorado State University Cooperative Extension.

Montana State University. 2000. Montana Interagency plant Materials Handbook for Forage Production, Conservation, Reclamation, and Wildlife. MSU Extension Service EB 69

### **State Correlation:**

This site has been correlated with the following States: UT

### **Forage Suitability Group Approval:**

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